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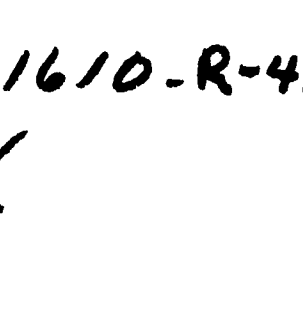
Simulation games were used as part of a summer program with 76 students who were either not interested or not benefiting from traditional classroom approaches. The Democracy Game and the Consumer Game were played for five days in place of regular English classes. Questionnaires were administered to the students before and after game participation. Due to several unforeseen factors in group control, the experimental data is not as complete or as valid as was hoped. Among the conclusions were: (1) students enjoyed playing the games, (2) students talked about the games outside school, and (3) attitudes were changed as a result of their simulated environments set up in the games. Game involvement appears to set the student to thinking, and students indicated a preference for the game experience over regular classroom experiences. (ST)



THE JOHNS HOPKINS UNIVERSITY REPORT No. 42

THE CENTER FOR THE STUDY OF SOCIAL ORGANIZATION OF SCHOOLS

THE EFFECTS OF TWO SIMULATION GAMES ON THE OPINIONS AND ATTITUDES OF SELECTED SIXTH, SEVENTH, AND EIGHTH GRADE STUDENTS

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INTRODUCTION

The purpose of this pilot project was to evaluate the effect of using two simulation games as part of a summer school program in an attempt (1) to involve students who were not interested in or were not benefiting from the traditional classroom approach, and (2) to introduce these academic games to regular teachers and to acquaint them with this relatively new or different kind of teaching technique. The evaluation involved measuring the students' reactions to the game situation, including their attitude and opinion changes following participation, as well as asking them to compare the games with a regular classroom approach on several dimensions. Included also are observations of the games in progress and the teachers' reactions to the two games as teaching devices.

METHODOLOGY

The games selected for the project were the Democracy Game and the Consumer Game.[1] (Both of these games are described briefly in the appendix to this paper.) The teachers were introduced to the games and to the project's goals in a special session prior to the start of the study. The teachers took copies of the games home for further study before using them in their regular classes.[2] The project was divided into two distinct phases. During the first phase, several classes of students were selected and assigned to experimental and control groups. All of the students in both groups filled out the pre-test form of Questionnaire I at the same time and under the same conditions. The questionnaire was designed to include several

items measuring their attitudes towards school and their attitudes toward items related to the content of the Democracy Game. In all, six classes of students were used in the experimental group (although only three groups resulted when they were combined to play the Democracy game), and two classes of students were used as the control group. The students in the experimental group then proceeded to play several sessions of the Democracy Game in place of their regularly scheduled English classes. The students in the control group attended their regularly scheduled classes. Ten days after the initial testing, both groups were brought together again, and they filled out the post-test form of Questionnaire I. In addition, only those students who had actually participated in the game session (i.e., the experimental group) filled out Questionnaire II, which dealt with specific comparisons between the game and class experiences. It would not have made sense to administer Questionnaire II to any students who had not played the game--the comparisons would have been meaningless. Since it was administered only after the games had been played and the other questionnaires completed, it could have had no effect on the other results.

During the second phase of the project, different students were selected to play the Consumer Game. They played this game for at least one week, and after they finished their game sessions they also filled out Questionnaire II, comparing their game experience with their regular classroom experience. Six additional classes of students were selected for this game, and when they were combined to make groups large enough to play, three Consumer Game groups resulted.

It should be noted here that in the analysis of the data no attempt was made to hold constant such variables as sex, age, I.Q., etc. Although such an attempt would have been desirable, in the actual experimental situation it was not possible to obtain groups of students large enough to make such a statistical analysis meaningful. Originally, the experimental and control groups for the Democracy Game were to contain 60 and 20 students respectively; and the experimental group for the Consumer Game, 60. These groups were to remain stable in terms of composition throughout the entire investigation. Unfortunately, several factors interefered: (1) the "flexible" scheduling and individual programming for the students in this program varied class composition from day to day, (2) the inclusion of special and supplementary enrichment activities preempted regular classroom scheduling on several occasions, and (3) the relatively high rate of absenteeism associated with any summer school program affected these classes as well. As a result, the classes in the study actually numbered three or four individuals, rather than nine or ten, producing a large experimental mortality.

These results, therefore, are derived from the entire group of questionnaires administered to all of the students who played either the Democracy Game or the Consumer Game, with differences in reaction reported for each game. The results appear to represent a rather general reaction to the game experience without differentiation of the effects which could produce variations attributable to variables

such as age, sex, amount of game exposure, etc. All of the students were 6th, 7th, and 8th graders, grouped together by the school administration for the purposes of the special education offered in the "Speedway" summer program. All of the students averaged five days of game playing before taking the post-test questionnaires; none of the respondents included had played fewer than three full days of the game involved.

The statistical breakdown of the various groups involved in this report is as follows:

	Number anticipated	Number of sets of questionnaires collected
Control Group	20	8*
Democracy Game	60	30*
Consumer Game	60	46

*The high experimental mortality in these groups was, in part, attributable to the fact that some of the classes of students involved were sent to summer camp for two weeks during the course of this investigation.

FINDINGS

As mentioned before, only eight students in the control group completed both questionnaires, although 20 had been anticipated. The primary reason for the high mortality in this group was the fact that half of this group was selected for a two week stay in summer camp, and post-test results from these students could not be obtained. The

experimental group similarly lost many members.

A comparison was made, nevertheless, between each item on the pre-test form of Questionnaire I and the corresponding item on the post-test. A chi-square comparison of the response-array on each item revealed no statistically significant differences in the control group (i.e., no significant changes in attitude or opinion). In addition, a comparison was made between the responses of the experimental group on the pre-test and those of the control group on the pre-test, and again, no statistically significant differences were found. Significant differences were found, however, between the pre-test and post-test responses of the experimental group, and these findings are reported below.

On the basis of these findings--although the number of cases involved is small--as well as of the findings of previous research,[3] it can be stated with a fair degree of certainty that the statistically significant findings appearing in the experimental group were due to the game experience rather than to chance or to the testing situation itself. There is no indication of any changes in response produced by the use of these particular questionnaires.

The following section is based on information derived from Questionnaire II, which was administered after five full days of play to all students who played either the Democracy Game or the Consumer Game. The students were asked to compare the game they had been playing with the work they usually do in a regular class. These comparisons were made on several dimensions. A brief synopsis

of these results is presented here.

According to the students' reports, the games were preferable to class in most respects. The majority reported that the games were easier than their regular classroom work (74%), were more interesting than their regular classroom work (87%), allowed them more independence or freedom to work on their own (82%), made better use of their own particular abilities or talents (61%), gave them a better idea of how well they were doing (52%), involved more competition with other students in the class (80%), and would be preferred by the best student in the class (52%). In addition, more students felt that the class ran more smoothly during the game than during class (48% choosing game vs. 40% choosing class), and more students felt that the poorest student also would prefer the game (47% choosing game vs. 41% choosing class), but on these two items the proportion of the respondents selecting either alternative was less than 50%.

There were only two items on which there was an even division of opinion: (1) the students felt approximately the same amount of pressure playing the game as they did in class,[4] and (2) they felt teachers would not prefer one kind of approach to the other.

In another part of the questionnaire, the students in the two experimental groups were given equal opportunities to list all of the things they liked about the game and all of the things they didn't like about the game. On the average, students listed 2.0

things that they liked, and only 0.2 things that they disliked. A t-test, comparing the difference between these means, was significant($t = 4.5$, d.f. = 25, $p < .001$ using a two-tailed test).

In brief, then, the students reported liking significantly more things about the game than they disliked about the game, and they also preferred the game situation to the regular classroom situation consistently, across many choices. On only two items was there an even division of opinion.

Although the students, in general, preferred the games they played to regular classroom instruction, a closer analysis of the data indicated that in a few respects they found the Consumer Game preferable to the Democracy Game.

A chi-square analysis was done, comparing the response-array to each questionnaire item for the Democracy Game players with those of the Consumer Game players. Of the twelve comparisons made, three proved to be significant statistically ($p \leq .05$). The items involved measures comparing class and game in terms of (1) competition with other students, (2) feelings of pressure, and (3) preference of the poorest student. The findings were that students playing the Consumer Game felt it involved more competition with other students in their classes than did those playing the Democracy Game, although both groups thought the games involved more competition than regular class. On this item, both groups of students had the same opinion, as it were, but the students who played the Consumer Game seemed to feel more strongly about it. The students

reported liking this competition (88%) in both groups.

On the other two items, however, clear and significant differences of opinion appeared. The students playing the Democracy game said they felt greater pressure playing the game; those playing the Consumer Game said they felt greater pressure doing regular class work. Also, the students playing the Consumer Game felt that the poorest student in the class would prefer the game; those playing the Democracy Game felt that the poorest student would prefer regular class. Since these students were all relatively poor students (in their regular school settings), this finding may be of interest.

The results of Questionnaire II have been reported above; they involved the students' reactions to the specific games they played. The pre-and post-test forms of Questionnaire I, however, were designed to measure more general reactions, including items to measure student attitude towards school (9 items), political attitudes (5 items), and political background and information (4 items).

A chi-square comparison was made between each of the items on the pre-test questionnaire and its corresponding item on the post-test questionnaire for both the experimental and control groups. As mentioned before, no significant changes were found in the control group. In the experimental group, however, several significant shifts in opinion did occur. Two of these shifts or changes reached the .05 level of significance and two others approached this level. Since the size of the sample involved was so small, even those results which approached significance will be reported here, with the appropriate

level indicated, for any such findings appearing in a sample this small are of interest.

In all the measures of attitude towards school, no significant shifts or changes occurred. Indeed, no shifts or changes even approaching a level of statistical significance occurred. However, on all of the six items directly measuring political attitudes, opinions, and information, shifts in opinion were found.

Item #5 measured the students' responses to the statement, "The average person can't do much about politics, so he might just as well stay out of the whole thing." There were six possible scores an individual could mark on this item, ranging from a "1" indicating an opinion of "Strongly Agree" to a "6" indicating an opinion of "Strongly Disagree." Each student could mark the shade of opinion (between and including these extremes) that he felt was nearest to his own opinion. On the pre-test, the average opinion rank in the experimental group was 3.9; on the post-test it was 4.3, indicating more disagreement with the original statement. In other words, the students who played the game felt the average person could do more about politics than they had felt he could before they played the roles of politicians. This shift of opinion, although uniform in direction for all students, was not large enough to be significant at the .05 level, nor did it approach this level. There was no shift of opinion on this item in the control group.

On Item #6, the shift in opinion was larger, and did approach the level of significance of .20 -- not particularly striking, yet indicative when based on such a small sample. Item #6 was a response

to the statement, "Pressure groups are useful in a democratic government," with a "1" representing "Strongly Agree" and a "6" representing "Strongly Disagree." On the pre-test the experimental group averaged 3.9 and on the post-test 3.0, indicating that the students felt pressure groups more useful after playing the game than before. The control group did not change their opinion on this item.

On Item #7, the change in opinion was even larger and was significant at the .001 level. The item was, "On most issues, we should expect congressmen to vote according to the way they believe, even though the voters who elected them may not agree." Again, a "1" represented "Strongly Agree" and a "6" represented "Strongly Disagree." The experimental group averaged 2.4 on the pre-test and shifted to 3.6 on the post-test. This shift indicates an increasing conviction that congressmen should vote the way their electorate feels. Again, the control group had no significant change in opinion on this item.

On Item #8, the change in opinion was still larger and was significant at the .001 level. This item was a response to the statement, "Sending letters to congressmen is a waste of time." A "1" indicated "Strongly Agree" and a "6" indicated "Strongly Disagree." The experimental group's responses averaged 5.4 on the pre-test and 3.5 on the post-test, indicating that they were more likely to think sending letters to congressmen is a waste of time after they played the game than before.

Item #13 was a direct measure of gains in political information. It required the students to list all of the things they thought they

had learned in the game they had played. Although a few students listed specific facts, most of the students listed phrases beginning with "how," e.g., "how a politician operates," "how elections are run, etc." On this item the students listed, on the average, 2.4 things that they thought they had learned from playing the game. This was a difficult item to respond to, since it left the students' answers completely unstructured and forced them to verablize and write down the things they had learned, without any cues or recognition items for them to identify.

The last item involving the students' opinions or information was Item #12. This item consisted of an adjective check list, including 80 adjectives. The students were asked to circle all of those adjectives that described "What politicians are like." On a previous page the students had received an identical list and were asked to circle those adjectives applying to "most people." It was hoped that after playing the Democracy Game the students' average profiles for politicians would change more than their average profiles for "most people." The results of the analysis of these adjective lists did not indicate a clear pattern of change for either question by itself, although on the post-test significantly more adjectives were circled on both check lists by both the experimental group and the control group. Perhaps a larger sampling of students might yield the stronger trends in profile changes which have appeared in other studies.

In addition to the items covered in the previous section, which measured specific political attitudes and opinions, items were in-

cluded in the questionnaire to measure the level of the students' exposure to political information. They were asked if anyone in their family was at all active in politics and the nature of this activity. Only three people in the experimental group listed anyone at all, and only one person enumerated the kind of activity involved. The students were also asked how often they watched or heard news programs on TV or on radio. Their responses averaged 1.6 (indicating a general response of several times a week, but not every day) on the pre-test and 1.5 on the post-test--not a significant difference, and not any indication that they became more interested in news or current events after their participation in the game.

Since the project was partially an attempt to interest students in what they were doing and since, additionally, these were students who were generally not too interested in school, we included the item: "Did you talk to anyone outside of this class about the Election Game? If so, tell who they were in the space below." The response to this item was striking. In the experimental group, the average number of people listed was 3.1. The students, in other words, listed an average of more than three people with whom they talked outside their classes about the games they were playing. This may be in part due to the novelty effect of the game situation. Yet, in the context of this summer "Speedway" enrichment program, the game was not the only unique, different, or unusual activity these students were involved in. The fact that this activity generated their interest and activated commu-

nications with their parents, family, and friends was confirmed on Parents Visiting Day, when several parents asked specifically to see classes of the Democracy Game which their children had told them about.

A comparable effect of the Consumer Game could not be determined, since Visiting Day came prior to the administration of this game. But on the questionnaire given to the students who had played the Consumer Game, the average number of people listed was 4.7--even more of an apparent "outside" effect than for the Democracy Game.

TEACHERS' REACTIONS TO THE GAMES

The teachers had an opportunity to play a session of the Democracy Game before using it in their regular classes. This game-experience, coupled with an explanation of the project in general, served as their introduction to the project. The teachers had a fairly mixed reaction to using the games, finding faults with the game structure and things they felt the game emphasized, although all of the teachers who were asked to try the games agreed to do so. As mentioned before, the teachers prepared a special, didactic introduction to the Democracy Game for two of the three groups who played it, although an analysis of the students reactions did not show any variation between the "instructed" and "uninstructed" groups. Three teachers used this game directly in their classes. In a session following the completion of the experiment, the teachers seemed to feel that there were many worthwhile features of the game, particularly if it would be used as an adjunct to a civics or social studies class, rather than in an English

class. Two teachers mentioned specifically that they thought they might try the game out in a debating club which they advised, although they did not ask to keep copies of the game for this purpose. The teachers also felt that the Democracy Game should be improved for 6th, 7th, and 8th Grade use by changing the issues from national to local ones and by starting with a smaller number of issues which were more fully explained to the students.

The teachers also made one very interesting observation about the game in play which had not been noted in any previous research. This observation involved the performance of racially integrated groups as opposed to groups which were all white. One of the issues involved in the Democracy Game was that of Civil Rights. The attitudes on this issue expressed by the "electorate" involved opinions as to whether we should "move faster" in this area or "move slower." All of the students were expected to make "campaign speeches," involving, ultimately, all of the various issues. In the one all-white class of students who played this game, all of the issues were discussed in their respective turns. However, in the two classes which did include black students, none of the teachers were able to get any of the students to discuss the particular issue of Civil Rights, although there was no comparable problem with any of the other issues in the game (e.g., Federal Aid to Education, Medicare, etc.) Whether or not this phenomenon is unique to Worcester, Massachusetts or perhaps due to the age of the students involved is not known. In previous trials of this game with integrated groups of high school students, this reaction did not appear. The teachers here felt that the students did not seem to want to make the

black members of their group "feel any different," and so they all avoided discussing this issue.

Two teachers were involved in trying out the Consumer Game, and a third teacher spent his entire free session for ten days observing the game. The teachers were given copies of the game before using it in class, and they had the opportunity to familiarize themselves with it. They worked out supplementary aids to using the game, involving billboard displays of the items involved. In brief, the teachers found the Consumer Game to be an overwhelming success. They found the students at this grade level quite capable of understanding and playing the game and eager to continue playing, even when the sessions were officially concluded. Their only criticism involved the amount of "money" the students had to spend. They felt that this amount should be reduced so that students would be forced to forego purchase of some items. They also felt the "utility point structure" involved in the game could easily be re-apportioned to make the consequences of some activities more "costly" to the students than others. Although this feature is already built into the game, they felt some of the relative values could be changed to make the game more interesting or decisions more difficult. The teachers were quite interested in the game, wanted to use it in their own classes in the following school year, and made arrangements to keep the games for a while so that they could use them in their regular high school classes.

CONCLUSIONS

The conclusions from any study like this one must necessarily be tentative. In general, the use of the games seemed to be a good classroom activity for these students. They enjoyed playing the games, they talked about them outside school, and their attitudes were changed as a result of their adopting various roles in the simulated environments set up in the games. No particular interpretations were made concerning the changes in attitude generated by the Democracy Game. The most reasonable interpretation seems to be that the students who had played the game were in the process of acquiring more sophisticated notions as to what is involved in the political process--perhaps becoming more cynical as to the effects of particular actions, such as an individual's writing a letter to his congressman, but more knowledgeable as to the effect of particular pressure groups and voter interests in determining a congressman's activities and votes on issues. More studies must be made to determine the long-term effects of the game experience on students' attitudes and opinions. Such measurement was impossible in the context of this experiment, but should certainly be attempted when the games are used in the future in the context of a regular academic year. In addition, better measurement techniques could be used when the planning time is sufficient to do so.

What is overwhelmingly apparant, despite the limitations of this study due to the small number of students and the brief time span involved, is that their game involvement does set the students to

thinking (as evidenced by the amount of attitude change), and that the students prefer the game experience to their regular classroom experience on a variety of dimensions. As a supplement to the traditional curriculum, the use of these games would be heartily recommended. Further studies should be done to determine what the students actually learn from the games, as compared with traditional classroom activities, and how students' opinions change after playing the games. It would also be very interesting and helpful to the schools to try these games at different age and ability levels in order to see where and at what stage they can have maximum effect.

APPENDIX

In the Democracy Game each player takes the role of a legislator whose re-election depends on the degree to which his constituents are satisfied with the actions of the legislature on certain issues. The player knows in advance which way his constituents want each issue to be decided and how many votes toward re-election each issue is worth. (Often a player's constituents will be indifferent or evenly divided on several of the issues.) The game consists of a legislative session in which each player has one vote on each issue. Time is provided for speech-making and for "log-rolling" (i.e., making voting agreements).

In the Consumer Game a player may be either a "consumer" or a "credit agent" (bank, department store, or finance company loan officer). Each consumer attempts to use his monthly income as efficiently as possible to purchase several large consumer items. Each item has a specified value in "utility points." Chance cards produce unanticipated expenses or opportunities to buy at discount prices. The credit agents loan money to the consumers, each charging a specified rate of interest (lowest for the bank, highest for the finance company). A credit agent receives points for making a loan but loses points for each missed payment. He also loses a larger number of points if he decides to repossess an item in order to avoid further missed payments.

FOOTNOTES

[1]These games were developed at The Johns Hopkins University, Baltimore, Maryland, and are available through Western Publishing Company, School & Library Division, 850 3rd Ave., N.Y., N.Y.

[2]The teachers using the Democracy Game felt that the students needed some preparation and introduction to many of the terms and concepts involved. On their own, the teachers worked out an introductory session which they presented to their students before actually beginning to play the game. This didactic session may or may not have influenced the students' reactions to the game, and it is a variable to keep in mind when interpreting the students' differential reactions to the games they played. The teachers using the Consumer Game, on the other hand, presented the game to their students with no special introductory lesson, thus using the game more as it was intended to be used.

[3]Similar instruments have been used by the investigator in previous studies involving much larger control groups and have by themselves produced no statistically significant changes in response.

[4]A further analysis of this data item reveals that the bulk of the pressure was felt by students playing the Democracy Game and not by students playing the Consumer Game.